REMARKS

In response to the Office Action dated July 14, 2004, Applicants respectfully request reconsideration and withdrawal of the rejections of the claims.

The declaration was objected to, on the grounds that it does not identify the citizenship of each inventor. A new declaration is attached hereto.

Claims 20, 23, 25 and 32-38 were rejected under 35 U.S.C. §102(a) on the grounds that they were considered to be anticipated by the Kozenkov et al article. This article is a publication by the inventors themselves, and was not published prior to their invention of the claimed subject matter. In support thereof, a Declaration under 37 C.F.R. §1.132 is being submitted herewith, to remove the article as a prior art reference.

Claims 20-27, 31-35 and 38 were rejected in light of JP 10-333154 ("Kunihiro"), under 35 U.S.C. §102(b).

The lyotropic liquic crystals (LLCs) prepared by the Kunihiro process must be formed between two substrates (see the examples in paragraphs 41 to 47). This requirement leads to the formation of relatively thick LLCs (larger than about 25 microns). An LLC of such a thickness is impossible to use as an internal polarizer, and is inefficient to use as an external polarizer. In contrast, LLCs made according to the present teachings are able to produce LLCs of a thickness in the range of 0.3 to 1.5 microns.

Furthermore, Kunihiro requires azodye structures with pronounced cis-trans isonierization. The present invention uses photochemical stable azodye structures with no cis-trans isomerization.

Yet another point of distinction is that the LLC in Kunihiro is a nematic lyotropic liquid crystal, whereas the liquid crystal of the present invention is in isotropic phase. Kunihiro does not teach or suggest a method for orienting LLCs in isotropic phase.

Caims 20, 21, 23-30, 36 and 38 were rejected as being anticipated by US 5,838,407 ("Chigrinov").

The Chigrinov patent teaches a method of surface orientation of liquid crystals, whereby a liquid crystal disposed between two plates provided with electrodes and photopolymer layers is irradiated with linear polarized light (see Abstract and Column 2, lines 33-39). The preferred liquid crystal is a nematic liquid crystal (Column 2, lines 41-44) and is illuminated with UV polarized light (see Column 2, lines 64-67, as well as Figure 2).

The present invention differs from the Chigrinov patent in several ways.

First, a skilled person would recognize that the present invention enables the orientation of lyotropic liquid crystals, whereas the Chigrinov patent only teaches the orientation of thermotropic liquid crystals. The use of lyotropic liquid crystals as in the present invention, requires an appropriate isotropic solvent.

Furthermore, the starting liquid crystal of the Chigrinov patent is in an ordered nematic phase (Column 2, lines 41-44, as noted above), whereas the lyotropic liquid crystals used in the present invention are in a disordered isotropic phase, and are eventually oriented into anisotropic phase. The Chigrinov patent does not contemplate using liquid crystals in isotropic phase; the description and examples all refer to nematic liquid crystals.

As noted above, the Chigrinov patent method requires that the photoreactive organic material be exposed to polarized UV light (see Figure 2 and corresponding description at Column 2, lines 61-67). In contrast, the present invention allows the orientation to occur

without the need for polarized UV light. For instance, the specification at page 12, last paragraph, through page 13, line 5, states:

> In addition it is possible to induce the photo-alignment for a lyotropic liquid crystal using obliquely incident non-polarized light. In this case, the molecular order in the photo-alignment layer increases with the exposure energy. The preferred orientation of the lyotropic molecules is parallel to the plane of oblique incidence and depends on the interaction between the lyotropic and dye molecules. *Thus expensive UV-polarizers can be eliminated and the whole production process of thin internal polarization films can be considerably simplified.*" [emphasis added].

In view of the forgoing, therefore, it is respectfully submitted that the claimed subject matter is patentable over the cited references. Reconsideration and withdrawal of the rejections are respectfully requested.

Respectfully submitted,

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